CS 1301
Individual: Homework 4 – Getting to Know Your Robot
Due: Friday Sep 27th, before 11:55 PM
Out of 100 points

Files to submit: hw4.py

This is an INDIVIDUAL assignment!

Collaboration at a reasonable level will not result in substantially similar code. Students may only collaborate with fellow students currently taking CS 1301, the TA's and the lecturer. Collaboration means talking through problems, assisting with debugging, explaining a concept, etc. You should not exchange code or write code for others.

For Help:
- TA Helpdesk – Schedule posted on class website.
- Email TAs
- Instructor's office hours

Notes:
- **Don't forget to include the required comments and collaboration statement (as outlined on the course syllabus).**
- **Do not wait until the last minute** to do this assignment in case you run into problems.
  If you find a significant error in the homework assignment, please let a TA know immediately.

Part 1 – Come on robot-- sing, dance, and sing!
(55 points)

Hopefully by now, you've gotten your robot out of the box and made friends with it (or at least acquaintances); given it a name and a long, intricate history. Well, how about now you take it out to a dance?

Of course, you'll have to teach your robot to dance. You will find the following reference about Myro functions useful:

http://calicoproject.org/Calico_Myro

Have your robot do a little dance. The dance should last for at least 20 seconds, and contain at least 3 distinct dance moves. Don't just go back and forth for 20 seconds; vary the dance a bit. (Credit will not be given for simple movements.) Pretend your robot is well-versed in rhythm and soul, or is at least a little spastic. You are allowed (and encouraged) to make your own helper functions that contain individual dance moves.

After you teach your robot how to dance, teach it how to sing! The **beep()** function is very helpful – it allows the robot produce various tones. You are encouraged to write a helper function for the song. Also consider using variables and a for loop for the song so you do not need to type "beep()" a gazillion times. The song must consist of at least 30 notes/beeps and carry some sort of melody.

Write your dance as a function called **danceSing()**, and save it into a file called **hw4.py**. Please name your function and file exactly as requested.

Part 2 – Dance/Sing Remix (45 Pts)

Now that you've taught your robot how to dance and sing, you can demonstrate it to your friends and family. They are very impressed by its performance, but everyone wants the robot to do his or her own version of the dance. Luckily, with a little Python, you can let anyone customize your robot's dance routine without having to teach him or her how to program.

For this part of the assignment, you'll use conditionals ("if" statements) and a while loop to create a menu that allows the user to select a dance step or song. Name the function that contains this menu **menu()**, and save it in the same **hw4.py** file. If you used helper functions in your danceSing() from the first part of the assignment, you can re-use those. (Copy and paste them into the new file) Your menu must implement **at least 2 distinct dance choices**, **a song/melody**, and **an option to exit the program**. If the user types something invalid, you should let them know and print the menu again.

Here's an example of how menu() might work. The user's input is shown in blue.

```
1. The Wobble
2. Gangnam Style (The Horse Dance)
3. Waltz
4. GT Fight Song
0. Exit
Which dance step/song would you like? 1
```

(The robot does a dance move called The Wobble. The program doesn't show the menu again until this move finishes a few seconds later.)

```
1. The Wobble
2. Gangnam Style (The Horse Dance)
3. Waltz
4. GT Fight Song
0. Exit
Which dance step/song would you like? 5
I'm sorry, I don't know that one.
1. The Wobble
2. Gangnam Style (The Horse Dance)
3. Waltz
4. GT Fight Song
0. Exit
Which dance step/song would you like? 0
Have a good day!
```

(The menu() function terminates.)

Part 3 – Turning It In

Once you're done, please submit **hw4.py** to T-Square.

Remember – if there are serious errors in a part of the homework, you will lose credit for that particular part. ***If your file completely fails to run, it will not be graded.*** **Please test your code thoroughly before turning it in!**

Part 4 – Grading Rubric

Part 1 – Dance – 55 points
        Function named correctly (danceSing) – 5 points
        Dance lasts for at least 20 seconds – 10 points
        Contains at least 3 distinct moves – 20 points
        Robot sings – 20 points (10 points for melody, 5 points for at least 30 notes, 5 points for not being annoying)
Total: 55 points

Part 2 – Menu – 45 points
        Function is named correctly (menu) - 5 points
        Displays a menu with options- 5
        Accepts input from the user - 5
        Loops correctly - 10
        Handles at least three cases with conditionals - 10
        Shows off (at least) 3 distinct moves & 1 song- 5
        Exits correctly - 5
Total: 45 points

For a grand total of 100 possible points.
You can earn up to 5 points bonus [discretion of the TAs] for extra creativity/general awesomeness, for a possible total of 105/100.

Written By: Ann Ruengvivatpant, Spring 2013